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Abstract

INTERNATIONAL COOPERATION ON NUCLEAR POWER

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The discovery that nuclear energy might be released by a neutron chain reaction in uranium was the culmination of cooperative scientific research in many nations. Ironically that discovery came just as the black cloud of war descended on the world cutting off the normal flow of information in the world community of science.

International exchange of information on nuclear energy came slowly after the war because of the appalling destructive power of nuclear weapons and because of the atmosphere of unrest and mutual suspicion. In 1945 the United States began to release the maximum of information consonant with military security and, in the Baruch plan, advanced a scheme intended to control nuclear weapons and promote the peaceful uses of nuclear energy.

The Baruch plan was not accepted but gradually information has been disseminated through bilateral arrangements including exchange of visitors, through normal channels of publication and through international conferences. The most comprehensive of these conferences were those held in Geneva in 1955 and in 1958. The published proceedings of those conferences are a notable monument to international cooperation.

The basic principles of a nuclear power reactor are very simple. This may account for early optimism about the immediate prospects for cheap nuclear power. In reality the development of nuclear power reactors that would be reliable and economically competitive with other sources of energy has proven difficult. Consequently the exchange of scientific, technological and economic information has been essential.

There are many bilateral or multilateral agreements looking toward the construction of nuclear power plants. These cooperative schemes range from the extreme of the customer country getting only information to the other extreme of a complete "turn key" package of power reactor, auxiliary equipment, arrangements for reprocessing spent fuel and guaranteed supply of new fuel.

Examples of cooperative arrangements include the Dragon project for the development of a high temperature gas cooled reactor. The Dragon project is unique in the large number of countries cooperating. Another example is the bilateral understanding between Canada and the United States whereby Canada leads the way in the development of heavy water reactors with the full cooperation of the United States.

More immediately aimed at the construction of nuclear power plants, the Euratom group was formed in 1957 and agreement for cooperation with the United States signed a year later. The change in the Euratom program since its initial announcement illustrates the shift from the exaggerated optimism of the middle fifties to the more realistic views of the present time.

Japan is constructing a series of reactors of different size and type under a variety of arrangements with a number of countries.

The United States has arrangements with more than twenty countries covering more than sixty reactors or critical assemblies which have been furnished wholly or in part by the United States and which are subject to safeguards against diversion to military use. Since most of these are small, safeguarding is not very important in practice, but it is extremely important in principle.

In connection with such arrangements as have been mentioned, there are many questions concerning health and safety, liability for accidents, waste management and so on. Of particular importance is assurance against diversion to military use. Many of these questions concern the whole community of nations, not just the country where the reactor is located.

For this reason cooperative international control is essential to the safe proliferation of nuclear power plants. Such control can and should be exercised by vigorous support of the International Atomic Energy Agency.